

# **EXHIBIT 20**

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**UNITED STATES DISTRICT COURT**  
**NORTHERN DISTRICT OF CALIFORNIA**  
**SAN FRANCISCO DIVISION**

19 GOOGLE LLC,

20 Plaintiff

21 v. Case No. 3:20-cv-06754-WHA

22 SONOS, INC.,

23 Defendant.

24  
25  
26  
**GOOGLE LLC’S THIRD SUPPLEMENTAL OBJECTIONS AND RESPONSES TO**  
**PLAINTIFF SONOS, INC.’S FIRST SET OF FACT DISCOVERY INTERROGATORIES**  
**(NO. 15)**

27 Pursuant to Rule 33 of the Federal Rules of Civil Procedure, Defendant Google LLC  
28 (“Google”) hereby objects and responds to Plaintiff Sonos, Inc.’s (“Sonos”) First Set of Fact  
Discovery Interrogatories to Defendant (“Interrogatories”). Google responds to these  
additional information becomes available.

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**1           OBJECTIONS AND RESPONSES TO FACT DISCOVERY INTERROGATORIES**

**2           INTERROGATORY NO. 15:**

3           For each of the YouTube, YouTube Music, YouTube TV, Google Play Music, Google  
 4           Podcasts, and Spotify media services, describe in detail how an Accused Google Product (e.g., an  
 5           Accused Cast-Enabled Media Player or Accused Pixel Device) receives and then plays back a  
 6           sequence of media items (e.g., songs, podcast episodes, etc.) in connection with a given one of the  
 7           aforementioned media services including, but not limited to, (i) describing in detail any  
 8           communications between the Accused Google Product and any web server (e.g., Accused Google  
 9           Server or third-party server) and how such communications take place, (ii) describing in detail how  
 10          any Accused Google Server generates, maintains, and/or updates a set of one or more media-item  
 11          “recommendations”<sup>1</sup> that are sent to the Accused Google Product and how those  
 12          “recommendations” are sent to the Accused Google Product, and (iii) describing in detail how any  
 13          Accused Google Server facilitates Google’s “Autoplay feature”<sup>2</sup> for playback at the Accused  
 14          Google Product and how the “Autoplay feature” is utilized at the Accused Google Product.

15          **OBJECTIONS:** Google incorporates by reference all of its General Objections as if fully set forth  
 16          herein. Google objects to the characterization of this interrogatory as a single interrogatory given  
 17          that it contains multiple discrete subparts under Fed. R. Civ. P. 33(a)(1). Google objects to this  
 18          interrogatory on the grounds that it is vague, ambiguous, unclear as to information sought, and  
 19          lacking sufficient particularity to permit Google to reasonably prepare a response with respect to the  
 20          undefined terms “receives and then plays back a sequence of media items,” “in connection with a  
 21          given one of the aforementioned media services,” “communications between the Accused Google  
 22          Product and any web server,” “how such communications take place,” “generates, maintains and/or  
 23          updates,” “how those ‘recommendations’ are sent to the Accused Google Product,” “how any

24  
 25          <sup>1</sup> See, e.g., <https://www.youtube.com/howyoutubeworks/product-features/recommendations/>;  
<https://support.google.com/youtubemusic/answer/6313542?hl=en>;  
<https://support.google.com/websearch/answer/10017274?hl=en&co=GENIE.Platform%3DAndroid#zippy=>.

26  
 27          <sup>2</sup> See, e.g.,  
<https://support.google.com/youtube/answer/6327615?hl=en&co=GENIE.Platform%3DAndroid>;  
<https://support.google.com/websearch/answer/10017274?hl=en&co=GENIE.Platform%3DAndroid#zippy=>.

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1 Accused Google Server facilitates Google’s ‘Autoplay feature’ for playback at the Accused  
2 Product,” and “how the ‘Autoplay feature’ is utilized at the Accused Google Product.” Google  
3 further objects to this interrogatory to the extent that it assumes the existence of hypothetical facts  
4 that are incorrect or unknown to Google.

5 Google also objects to this interrogatory as overbroad, burdensome, and not proportional to  
6 the needs of the case, including to the extent it seeks information that is not relevant to any claim or  
7 defense of any party or to the subject matter of this action, including to the extent that it seeks  
8 information regarding non-accused instrumentalities or technology such as “Spotify media services”  
9 and “third-party server[s].” Google further objects to this interrogatory as overbroad and unduly  
10 burdensome to the extent that it seeks information that is publicly available, not uniquely within the  
11 control of Google, or is equally available to Sonos. Google additionally objects to this interrogatory  
12 to the extent it seeks communications and information protected from disclosure by the attorney-  
13 client privilege and/or attorney work product doctrine. Google further objects to this interrogatory  
14 to the extent it seeks confidential and/or proprietary business information. Google also objects to  
15 this interrogatory to the extent that it premature seeks expert discovery, opinion, and/or testimony.  
16 Google additionally objects to this interrogatory to the extent it seeks information that is not  
17 reasonably accessible or that is not within Google’s possession, custody, or control. Google further  
18 objects to this interrogatory to the extent it seeks information that is unnecessarily cumulative or  
19 duplicative of information sought by other discovery, including Request for Production No. 20.

20 **RESPONSE:**

21 Subject to and without waiving the foregoing General and Specific objections, Google  
22 responds, as follows:

23 Pursuant to Rule 33(d) of the Federal Rules of Civil Procedure, Google further refers Sonos  
24 to the source code that Google has made available and the following documents containing  
25 information responsive to this interrogatory: GOOG-SONOSWDTX-00005033-53611.

26 **SUPPLEMENTAL RESPONSE:** Google maintains the General and Specific objections  
27 set forth above. Google further objects to this interrogatory on the grounds that it is vague and  
28

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1 ambiguous to the extent it seeks information regarding products not specifically identified by make  
2 or model number in Sonos’s infringement contentions. Google also objects to this interrogatory to  
3 the extent it seeks to encompass Spotify, which is a separate, third-party application. Subject to and  
4 without waiving the foregoing General and Specific objections, Google responds, as follows:  
5

6 Google refers Sonos to the source code that Google has made available, which is the best  
7 evidence of how the devices operate with respect to the operation of the accused functionalities.  
8 Pursuant to Rule 33(d) of the Federal Rules of Civil Procedure, Google further refers Sonos to the  
9 following documents created during product development which may contain information response  
10 to this interrogatory: GOOG-SONOSWDTX-00041650, GOOG-SONOSWDTX-00039521,  
11 GOOG-SONOSWDTX-00041722, GOOG-SONOSWDTX-00040397, GOOG-SONOSWDTX-  
12 00042266, GOOG-SONOSWDTX-00042272, GOOG-SONOSWDTX-00042282, GOOG-  
13 SONOSWDTX-00042365, GOOG-SONOSWDTX-00042378, GOOG-SONOSWDTX-00042380,  
14 GOOG-SONOSWDTX-00042385, GOOG-SONOSWDTX-00042397, GOOG-SONOSWDTX-  
15 00042402, GOOG-SONOSWDTX-00042404, GOOG-SONOSWDTX-00042413, GOOG-  
16 SONOSWDTX-00042754, GOOG-SONOSWDTX-00042954, GOOG-SONOSWDTX-00043052,  
17 GOOG-SONOSWDTX-00043318, GOOG-SONOSWDTX-00043323, GOOG-SONOSWDTX-  
18 00043799-803, GOOG-SONOSWDTX-00043820, GOOG-SONOSWDTX-00051820, GOOG-  
19 SONOSWDTX-00051848, GOOG-SONOSWDTX-00051918, GOOG-SONOSWDTX-00051924,  
20 GOOG-SONOSWDTX-00051927, GOOG-SONOSWDTX-00052944-71, GOOG-  
21 SONOSWDTX-00051608, GOOG-SONOSWDTX-00051943, GOOG-SONOSWDTX-00037978,  
22 GOOG-SONOSWDTX-00051947, GOOG-SONOSWDTX-00037634, GOOG-SONOSWDTX-  
23 00053379, GOOG-SONOSWDTX-00036998, GOOG-SONOSWDTX-00037178, GOOG-  
24 SONOSWDTX-00037042, GOOG-SONOSWDTX-00037081, GOOG-SONOSWDTX-00037220,  
25 GOOG-SONOSWDTX-00040331-83, GOOG-SONOSWDTX-00043467, GOOG-  
26 SONOSWDTX-00043471, GOOG-SONOSWDTX-00043550, GOOG-SONOSWDTX-00037146,  
27 GOOG-SONOSWDTX-00043548, GOOG-SONOSWDTX-00043676, GOOG-  
28

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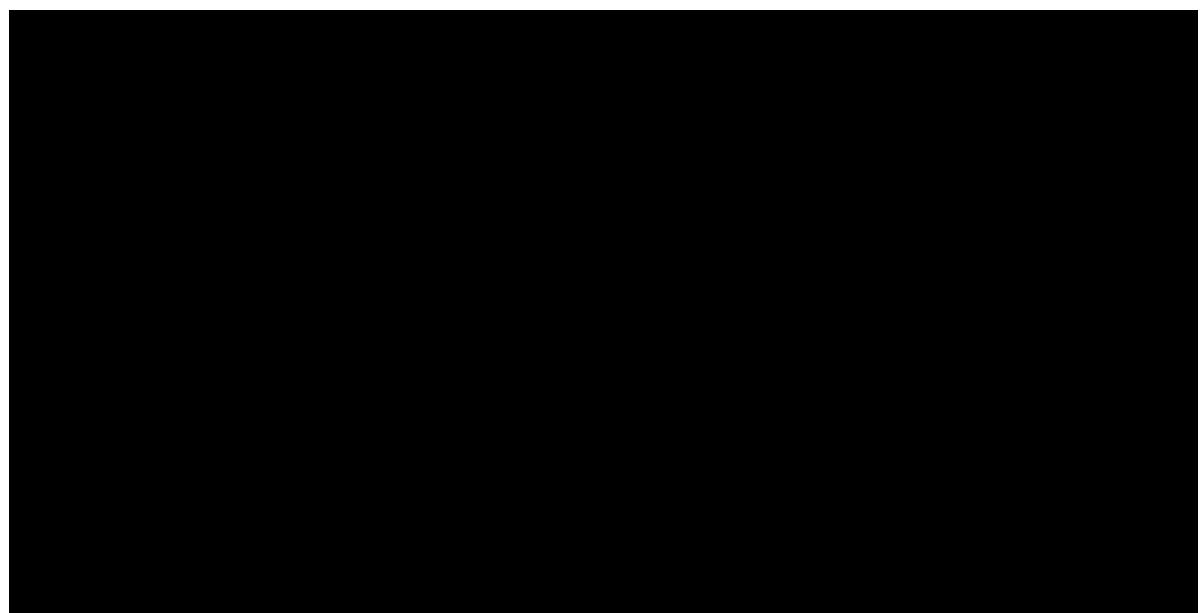
1 SONOSWDTX-00037178; *see also* GOOG-SONOSWDTX-00005033-8471, GOOG-  
2 SONOSWDTX-00022175-371, GOOG-SONOSWDTX-00036346-53611.

3 **SECOND SUPPLEMENTAL RESPONSE:**

4 Google maintains the General and Specific objections set forth above. Google further  
5 objects to this interrogatory on the grounds that it is vague, ambiguous, and overbroad to the extent  
6 it seeks information regarding products not specifically identified by make or model number in  
7 Sonos’s infringement contentions, or that have now been dropped by Sonos (*e.g.*, Podcast). Google  
8 also objects to this interrogatory to the extent it seeks to encompass Spotify, which is a separate,  
9 third-party application. Subject to and without waiving the foregoing General and Specific  
10 objections, Google responds, as follows:

11 Google fully incorporates herein by reference its responses to Interrogatory No. 14. Google  
12 further responds that casting operations involving the identified “autoplay” feature are generally  
13 described at least in GOOG-SONOSWDTX-00043467, GOOG-SONOSWDTX-00041491 and  
14 implemented in the source code provided by Google.

15 The illustration below provides a simplified view of the general architecture that is employed  
16 by devices running MDx applications (*e.g.*, YouTube or YouTube Music):



27 GOOG-SONOSWDTX-00041650. In this diagram, ‘[REDACTED]  
28 [REDACTED]

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1 [REDACTED]  
2 [REDACTED]  
3 [REDACTED]  
4 [REDACTED] [REDACTED]  
5 [REDACTED]  
6 [REDACTED] videoId. *Id.* at 8. The  
7 parameters of a setPlaylist message sent to the Screen are shown below:  
8 [REDACTED]  
9 [REDACTED]  
10 [REDACTED]  
11 [REDACTED]  
12 [REDACTED]  
13 [REDACTED]  
14 [REDACTED]  
15 [REDACTED]  
16 [REDACTED]  
17 [REDACTED]  
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]  
21 [REDACTED]  
22 [REDACTED]  
23 [REDACTED]  
24 [REDACTED]  
25 [REDACTED]  
26 [REDACTED]  
27 [REDACTED] of videoIds [REDACTED]  
28 [REDACTED]

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1 [REDACTED]  
2 [REDACTED] videoId (i.e., it is no longer a list) used to identify the video to play. *Id.*  
3 [REDACTED]  
4 [REDACTED]  
5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]  
8 [REDACTED]  
9 [REDACTED]  
10 [REDACTED]  
11 [REDACTED]  
12 [REDACTED]  
13 [REDACTED]  
14 [REDACTED]  
15 [REDACTED]  
16 [REDACTED]

17 As can be seen, the field “videoId” of the [REDACTED] is a string from the videoId  
18 field in the incoming “setPlaylist” message. To playback a video, the [REDACTED]  
19 [REDACTED]

20 An example of a “method” the Screen can receive from the YouTube Frontend service is the  
21 “GetWatchNext” method. Generally, at some point after the Screen begins playback of the current  
22 media item, GetWatchNext is called by the Screen to request the next WatchEndPoint. In response  
23 to GetWatchNext, the Screen receives WatchNextResponse, a protobuf message, which contains  
24 the videoId for the next item to play, along with metadata for the item currently playing, and other  
25 elements, such as an autoplay setting, for example.  
26

27 Within the YT Main app, if the user has reached the end of a playlist, or there is no other  
28 item to play next, the autoplay feature could be used to continue playing content. Specifically, when

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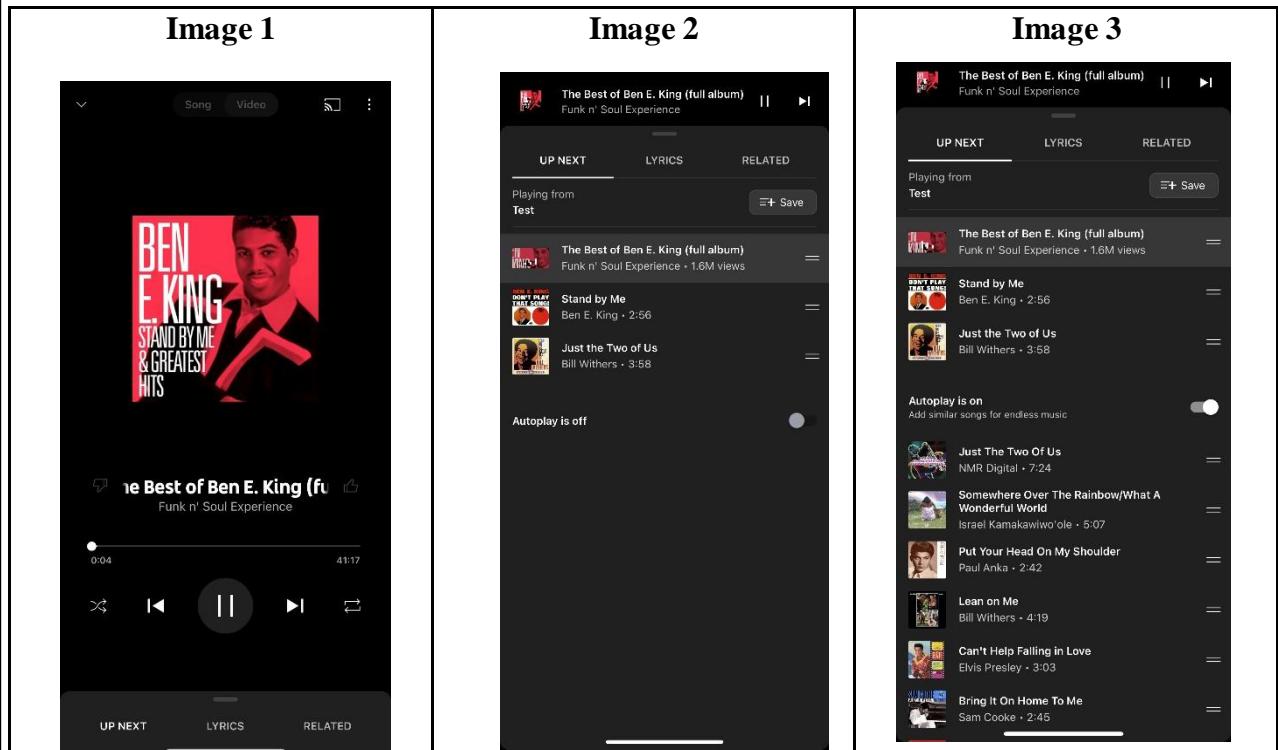
1 WatchNextResponse is loaded, the local variable upNextVideoId would be used to notify the  
2 Remote of what the next autoplay media item is, but upNextVideoId would not be used by any  
3 function to perform playback. upNextVideoId is not used for YT Music, at least because YT Music  
4 does not enable autoplay.

5       **THIRD SUPPLEMENTAL RESPONSE:** Google maintains the General and Specific  
6 objections set forth above. Google further objects to this Interrogatory as compound, irrelevant, and  
7 unduly burdensome in that it seeks a response “[f]or each of the YouTube, YouTube Music,  
8 YouTube TV, Google Play Music, Google Podcasts, and Spotify Media services.” For example,  
9 Sonos has dropped the “Google Podcasts” and “Spotify” applications from the case. Further, Sonos  
10 accused the Google Play Music application of infringing only its ’615 patent, and the Court has now  
11 granted summary judgment that the “Google Play Music” application does not infringe the ’615  
12 patent. Accordingly, Google will limit its response to the “YouTube Music,” “YouTube Music,”  
13 and YouTube TV applications. Google further objects to this interrogatory as vague, ambiguous,  
14 overbroad and unduly burdensome, including as to the phrase “describe in detail how an Accused  
15 Google Product (e.g., an Accused Cast-Enabled Media Player or Accused Pixel Device) receives  
16 and then plays back a sequence of media items (e.g., songs, podcast episodes, etc.) in connection  
17 with a given one of the aforementioned media services.” The accused YouTube applications and  
18 systems have numerous functionalities and features, involve many different playback scenarios, and  
19 are comprised of millions of lines of source code. Google also objects to this interrogatory to the  
20 extent Sonos is seeking to shift the burden of proving infringement on to Google. It is Sonos’s  
21 burden, not Google’s to prove infringement. Moreover, Sonos’s definition of “Accused Google  
22 Product” purports to encompass thousands of different (and unspecified) hardware devices. It is not  
23 practical for Google to describe “in detail” every playback scenario for every hardware device.  
24 Sonos’s infringement contentions are also vague and ambiguous as to the particular functionality  
25 that it is accusing. Google will provide a reasonable level of detail regarding how the accused  
26 applications playback media based on its current understanding of Sonos’s contentions.

27       A Pixel Device running an accused YouTube application allows users to add media items to  
28 a playlist on their Pixel Device. For example, the images below are of a YouTube Music application

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1 playing a playlist containing three songs (“The Best of Ben E. King”, “Stand by Me”, and “Just the  
 2 Two of Us”) on the Pixel Device. Image 1 shows the currently playing song. Images 2 and 3 show  
 3 a toggle button that can be used by the user to enable or disable “Autoplay.” In Image 2, Autoplay  
 4 is turned off. In Image 3, Autoplay is turned on and additional recommended media items (e.g.,  
 5 “Just the Two of Us,” “Somewhere Over the Rainbow,” etc.) are displayed below the toggle button.  
 6 When the user created playlist is exhausted, the Pixel Device will begin playing Autoplay items.



19 Sticking with the above example, the file [REDACTED] specifies the queue interface and the  
 20 file [REDACTED] implements the queue. They maintain locally, on the Pixel  
 21 Device, a user-editable list of videos ([REDACTED]) and an Autoplay List with recommended  
 22 videos ([REDACTED]). The user-editable list initially contains information for the three  
 23 songs (“The Best of Ben E. King”, “Stand by Me”, and “Just the Two of Us”) in the above example.  
 24 The Autoplay List contains information for the Autoplay items that follow (e.g., “Just the Two of  
 25 Us,” “Somewhere Over the Rainbow,” etc.). The user-editable and Autoplay lists are stored locally  
 26 on the Pixel Device as [REDACTED]. After the Pixel Device exhausts playback of the user  
 27 editable list, the first media item in the Autoplay list is added to the user editible list and selected  
 28 for playback. A user may also select an Autoplay List item at any time, in which case the selected

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1 Autoplay List item (and all preceding items in the Autoplay List) are moved to the [REDACTED]  
 2 and the selected item will be played back. For instance, if the user selects “Somewhere Over the  
 3 Rainbow,” then that item and the previous item in the Autoplay List (i.e., “Just the Two of Us”) are  
 4 added to the [REDACTED] on the Pixel Device and “Somewhere Over the Rainbow” will be  
 5 played back.

6 The Pixel Device communicates with a WatchNext service over the Internet when playing  
 7 media items on the Pixel Device. *See* [REDACTED]; *see*

8 *also* GOOG-SONOSWDTX-00039785.

*See* [REDACTED]

9 [REDACTED]; *see also* GOOG-SONOSWDTX-00039785.<sup>5</sup> For instance, the Pixel  
 10 Device transmits a WatchNext request message to the WatchNext service to obtain metadata for the  
 11 currently playing media item. When starting playback of a playlist, a WatchNext request message  
 12 may also be used to obtain recommended Autoplay videos. There is not a “remote playback queue”  
 13 from which these recommended videos are retrieved. Instead, the recommended videos are  
 14 dynamically generated by a “MixService”—based on criteria such as the video the user is watching,  
 15 a user’s watch history, and various other criteria and algorithm inputs—and returned to the Pixel  
 16 Device in the WatchNext Response. Recommended videos are only temporarily maintained in the  
 17 cloud and discarded when, for instance, a user restarts playback of the current playlist.

18 The Pixel Device also communicates with a Player service over the Internet when playing  
 19 media items on the device. For example, in addition to the WatchNext request the Pixel Device  
 20 sends a GetPlayer request to the Player Service. The Player service determines in real-time which

21 [REDACTED] in Google’s Content Delivery Network a user should talk to for a particular request

23

24 <sup>3</sup>[REDACTED]

25 <sup>4</sup>[REDACTED]

26 <sup>5</sup> Unlike the situation where a receiver device is playing back media during casting—which may  
 27 involve the receiver device obtaining a WatchNext Response that includes Autoplay sets with  
 28 video renderers for a previous [REDACTED] or next [REDACTED] command—playback locally on the Pixel Device does not use previous and next video renderers.

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1 and returns to the Pixel Device [REDACTED] . [REDACTED]  
2 [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] GOOG-  
3 SONOSNDCA-00115814 ([REDACTED]) at slide 9; GOOG-SONOSNDCA-  
4 00115893 ([REDACTED]) at 3 (“[REDACTED]  
5 [REDACTED]  
6 [REDACTED]). [REDACTED]  
7 [REDACTED]

8 [REDACTED] *See also* 7-27-2022 Bhattacharjee Rebuttal Rpt., ¶¶94-100.

9 A Pixel Device may also cast music for playback on a receiver device. When casting, the  
10 accused receiver device will playback a cloud queue. Version 3 of Google’s “Multi-Device  
11 Experience” (or MDx) protocol is used to manage playback on a receiver device during casting. In  
12 particular, the YouTube application communicates with the MDx server, which in turn  
13 communicates with the receiver device. [REDACTED]

14 [REDACTED] Once connected, the receiver device can receive “methods”  
15 (*i.e.*, messages or commands) from the MDx server. An example of one such method is the  
16 “setPlaylist” method. [REDACTED]

17 [REDACTED]  
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED] [REDACTED]  
21 [REDACTED]. at 8. The parameters of a setPlaylist message sent  
22 from the MDx server to the receiver device are described above in Google’s Second Supplemental  
23 Response and include the media item that should begin playing on the receiver device. *See also* 7-  
24 27-2022 Bhattacharjee Rebuttal Rpt., ¶88. The receiver device receives the setPlaylist message sent  
25  
26  
27

28

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<sup>6</sup> [REDACTED]

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1 by the MDx server. [REDACTED]  
2 [REDACTED]  
3 [REDACTED]  
4 [REDACTED]  
5 [REDACTED] See, e.g., GOOG-SONOSWDTX-00039491. The WatchNext request message includes,  
6 among other things, the videoID of the media currently playing  
7 ([REDACTED] and the playlistID corresponding to the cloud queue  
8 at the MDx server [REDACTED] The WatchNext request is  
9 received by the InnerTube servers [REDACTED] [REDACTED] [REDACTED]  
10 [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]  
11 [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]  
12 [REDACTED]  
13 [REDACTED] with a large volume of  
14 information, primarily relating to metadata for the currently playing media item. Within this large  
15 volume of information is the videoId for the next media item in the cloud queue. The GetPlayer  
16 request causes the Player service to return to the receiver device [REDACTED]  
17 [REDACTED].  
18 The receiver will send a get WatchNext request and GetPlayer request each time a new song or  
19 video starts playing. See also 7-27-2022 Bhattacharjee Rebuttal Rpt., ¶¶90-92.

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21

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28

7 [REDACTED]

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1 DATED: November 3, 2022

2 QUINN EMANUEL URQUHART & SULLIVAN,  
3 LLP

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17 *Counsel for Defendant Google LLC*

18 **CERTIFICATE OF SERVICE**

19 The undersigned hereby certifies that all counsel of record who have consented to electronic  
20 service are being served with a copy of this document via email on November 3, 2022.

21 /s/ Nima Hefazi

22 Nima Hefazi